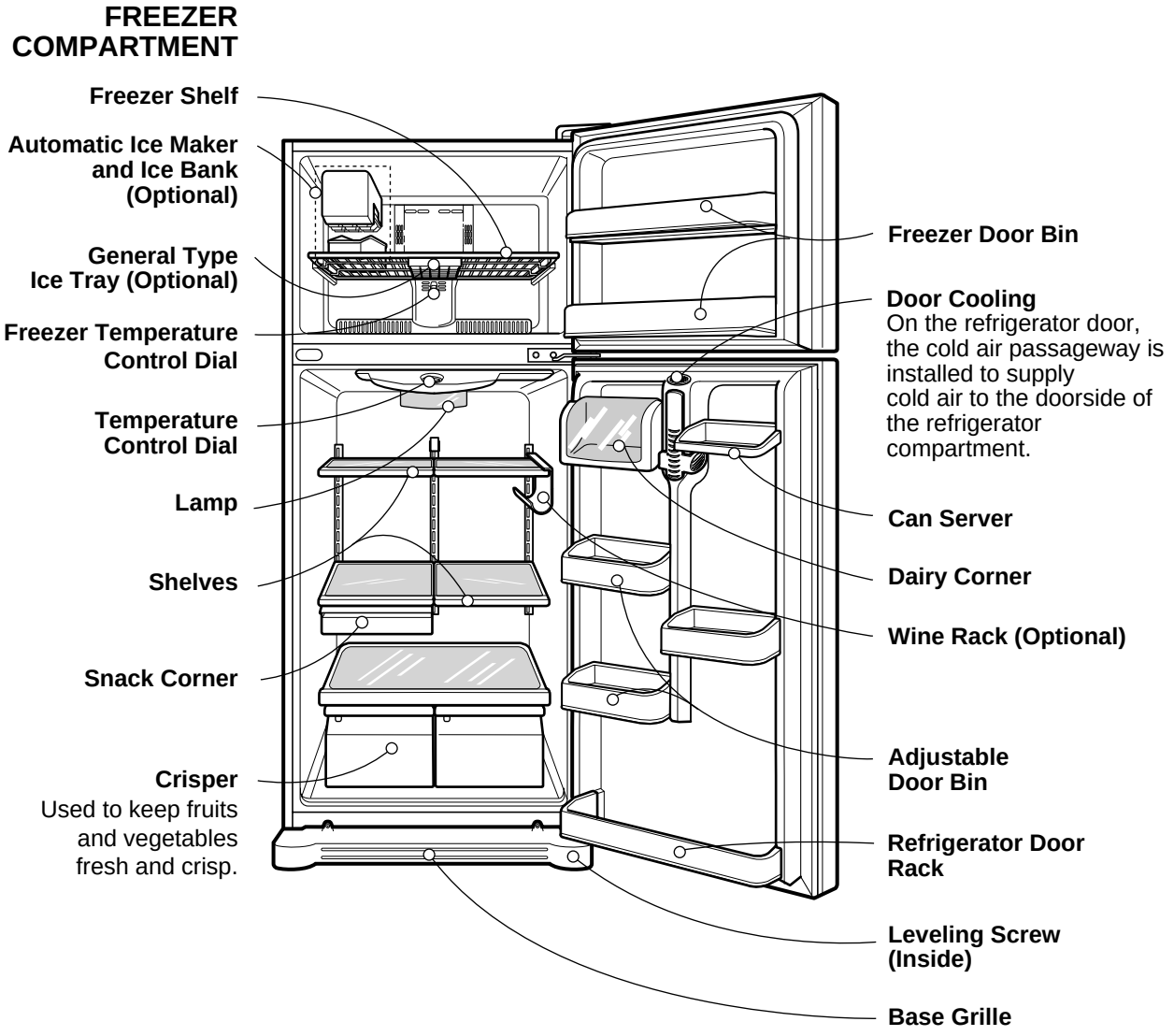
2. PARTS IDENTIFICATION



3. DISASSEMBLY

3-1 DOOR

● **Freezer Door**

1. Remove the hinge cover by pulling it upwards.
2. Loosen hexagonal bolts fixing the upper hinge to the body and lift the freezer door.

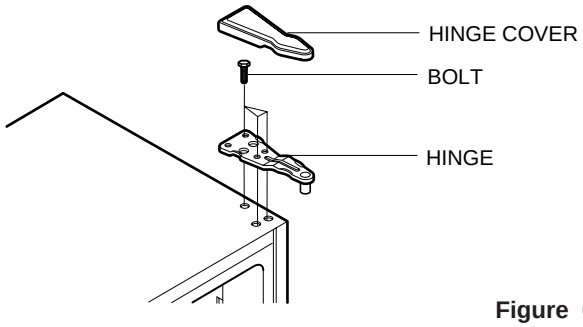


Figure 6

3. Pull out the door gasket to remove from the door foam Ass'y.

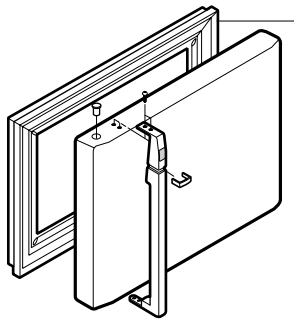


Figure 7

● **Refrigerator Door**

1. Loosen hexagonal bolts fixing the lower hinge to the body to remove the refrigerator door only.

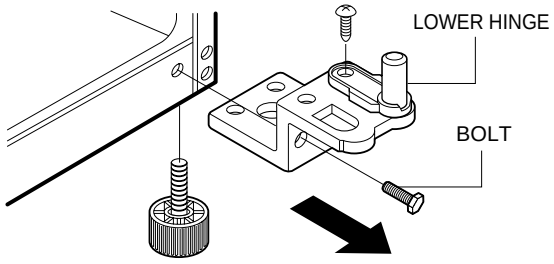


Figure 8

2. Pull out the door gasket to remove from the door foam Ass'y.

3-2 DOOR SWITCH

1. To remove the door switch, pull out it with a '–' type driver as shown in (figure 9).
2. Disconnect the lead wire from the switch.

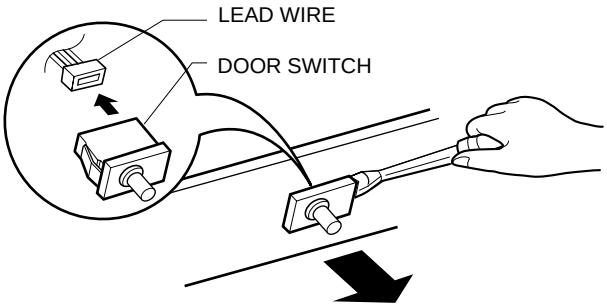


Figure 9

3-3 THERMOSTAT

1. Remove Control Box-R by loosening 2 screw fixed to ceiling of Refrigerator compartment (Figure 10)
2. Separate the thermostat and dial knob F.
3. Remove the thermostat by disconnecting the lead wire.

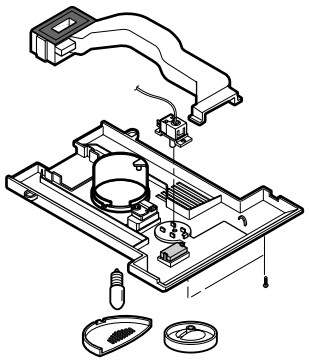


Figure 10

3.4 FAN AND FAN MOTOR

1. Remove the freezer shelf. (If your refrigerator have an Ice Maker, disassemble the Ice maker first)
2. Remove the Grille by pulling it out and by loosening a screw.
3. Remove the Fan Motor Assy by loosening 3 screws and disassemble the shroud.
4. Pull out the fan and, separate the Fan Motor, Brackets and the Cover Fan.

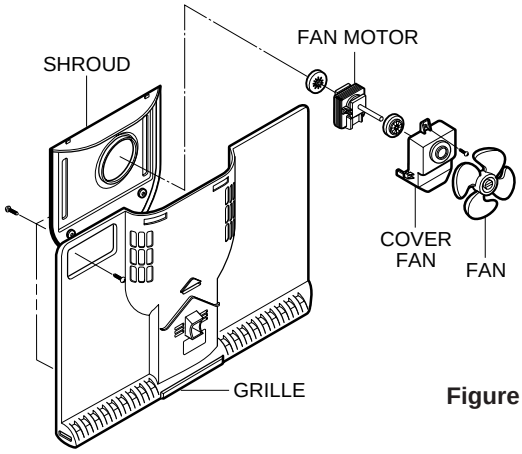


Figure 12

3-5 DEF' CONTROL ASSY

Def control Assy consists of Defrost Thermostat and FUSE–M.

Defrost Thermostat functions to defrost automatically and it is attached to metal side of the Evaporator and senses Temp.

Fuse-M is a kind of safety device for preventing over-heating of the Heater when defrosting.

At the temperature of 77°C, it stops the emission of heat from the Heater.

1. Pull out the Grille Ass'y.
2. Separate the connector connected with the Def Control Assy and replace the Def Control Assy after cutting the Tie Wrap. (Figure 14)

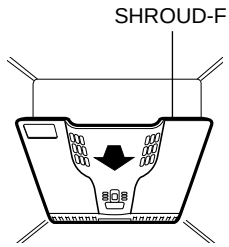


Figure 13

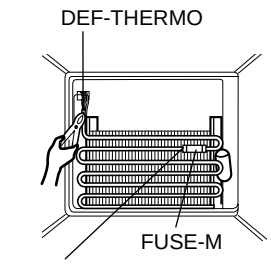


Figure 14

3-6 LAMP

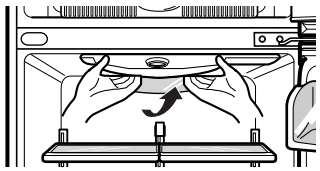


Figure 16

3-6-1 Refrigerator room lamp

1. Unplug the power cord from the outlet.
2. Remove refrigerator shelves.
3. Upper Refrigerator Lamp.
   Release the hooks on both ends of the lamp shield and pull the shield downward to remove it.
4. Turn the lamp counterclockwise.
5. Assemble in reverse order of disassembly. Replacement bulb must be the same specification as original.
   (Max 40 W)

3-7 CONTROL BOX-R

1. First, remove all shelves in the refrigerator and Control Box-R by loosening 2 screw.

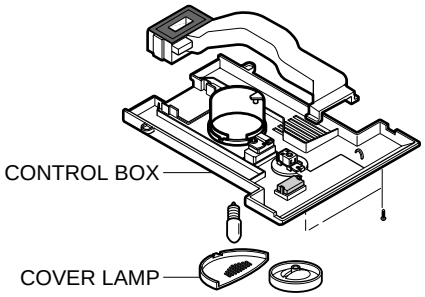


Figure 17

2. Remove the Control Box-R by pulling it downward.
3. Disconnect the L/wire on the right position and seperate timer, themostat, Lamp socket, etc.

4. ADJUSTMENT

4-1 COMPRESSOR

4-1-1 Role

The compressor intakes low temperature and low pressure gas evaporated from Evaporator of the Refrigerator, and condenses this gas to high temperature and high pressure gas, and then plays delivering role to Condenser.

4-1-2 Composition

The Compressor is Composed of Compressor Apparatus compressing gas, Compressor Motor moving Compressor Apparatus and Case protecting Compressor Apparatus and Motor. There are PTC-Starter, and Over Load Protector (OLP) in the Compressor outside. On the other hand, because the Compressor consists of 1/1000mm processing precision components and is sealed after production in absence of dust or humidity, deal and repair with care.

4-1-3 Note for Usage

(1) Be careful not to allow over-voltage and over-current.

(2) No Strike

If applying forcible power or strike (dropping or careless dealing), poor operation and noise may occur.

(3) Use proper electric components appropriate to the Compressor.

(4) Note to Keep Compressor.

If Compressor gets wet in the rain and rust in the pin of Hermetic Terminal, the result may be poor operation and poor contact may cause.

(5) Be careful that dust, humidity, and flux welding don't inflow in the Compressor inside in replacing the Compressor. Dust, humidity, and flux due to welding which inflows to Cylinder may cause lockage and noise.

4-2 PTC-STARTER

4-2-1 Composition of PTC-Starter

(1) PTC (Positive Temperature Coefficient) is a no-contact semiconductor starting device which uses ceramic material and this material consists of $BaTiO_3$.

(2) The higher the temperature is, the higher becomes the resistance value. These features are used as starting device for the Motor.

4-2-2 Role of PTC-Starter

(1) PTC is attached to Hermetic Compressor used for Refrigerator, Show Case and starts Motor.

(2) Compressor for household refrigerator applies to single-phase induction Motor.

For normal operation of the single-phase induction motor, in the starting operation flows in both main coil and sub-coil. After the starting is over, the current in subcoil is cut off. The proper features of PTC play all the above roles. So, PTC is used as a motor starting device.

4-2-3 PTC-Applied Circuit Diagram

● **According to Starting Method for the Motor**

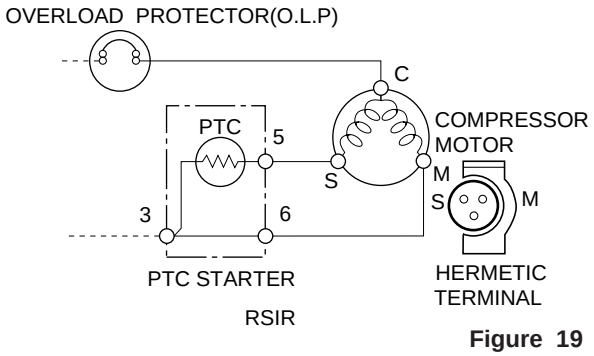


Figure 19

4-2-4 Motor Restarting and PTC Cooling

(1) For restarting after power off during normal Compressor Motor operation, plug the power cord after 5 min. for pressure balance of Refrigerating Cycle and PTC cooling.

(2) During normal operation of the Compressor Motor, PTC elements generate heat continuously. Therefore, if PTC isn't cooled for a while after the power has been shut off, Motor can't operate again.

4-2-5 Relation of PTC-Starter and OLP

(1) If the power is off during operation of Compressor and the power is on before the PTC is cooled, (instant shut-off within 2 min. or reconnect a power plug due to misconnecting), the PTC isn't cooled and a resistance value grows. As a result, current can't flow to the sub-coil and the Motor can't operate and the OLP operates by flowing over current in only in the main-coil.

(2) While the OLP repeats on and off operation about 3-5 times, PTC is cooled and Compressor Motor performs normal operation.

If OLP doesn't operate when PTC is not cooled, Compressor Motor is worn away and causes circuit-short and fire. Therefore, use a properly fixed OLP without fail.

4-2-6 Note to Use PTC-Starter

(1) Be careful not to allow over-voltage and over-current.

(2) No Strike

Don't apply a forcible power or strike.

(3) Keep apart from any liquid.

If liquid such as oil or water away enter the PTC, PTC materials it may break due to insulation breakdown of the material itself.

(4) Don't change PTC at your convenience.

Don't disassemble PTC and mold. If the exterior to the PTC-starter is damaged, resistance value is altered and it may cause poor starting of the compressor motor may cause.

(5) Use a properly fixed PTC.

4-3 OLP (OVER LOAD PROTECTOR)

4-3-1 Definition of OLP

(1) OLP (OVER LOAD PROTECTOR) is attached to the Hermetic Compressor and protects the Motor by cutting off current in Compressor Motor in case of over-rising temperature by Bimetal in the OLP.

(2) When over-voltage flows to Compressor motor, the Bimetal works by heating the heater inside the OLP, and the OLP protects Motor by cutting off current which flows to the Compressor Motor.

4-3-2 Role of the OLP

(1) The OLP is attached to the Hermetic Compressor used for the Refrigerator and Show Case and prevents the Motor Coil from being started in the Compressor.

(2) Do not turn the Adjust Screw of the OLP in any way for normal operation of the OLP.
(Composition and connection Diagram of OLP)

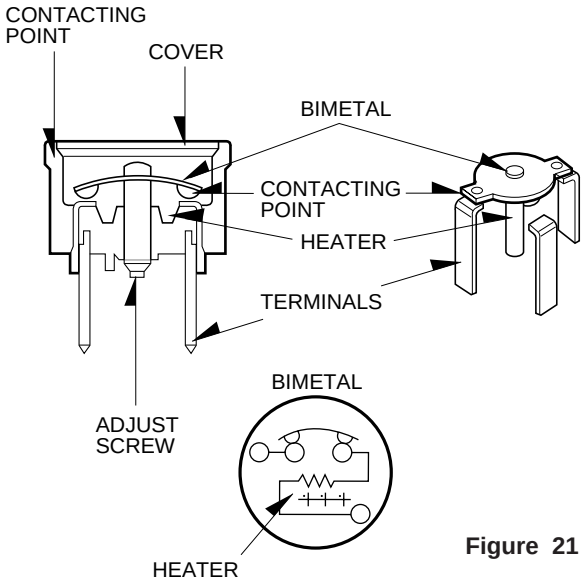
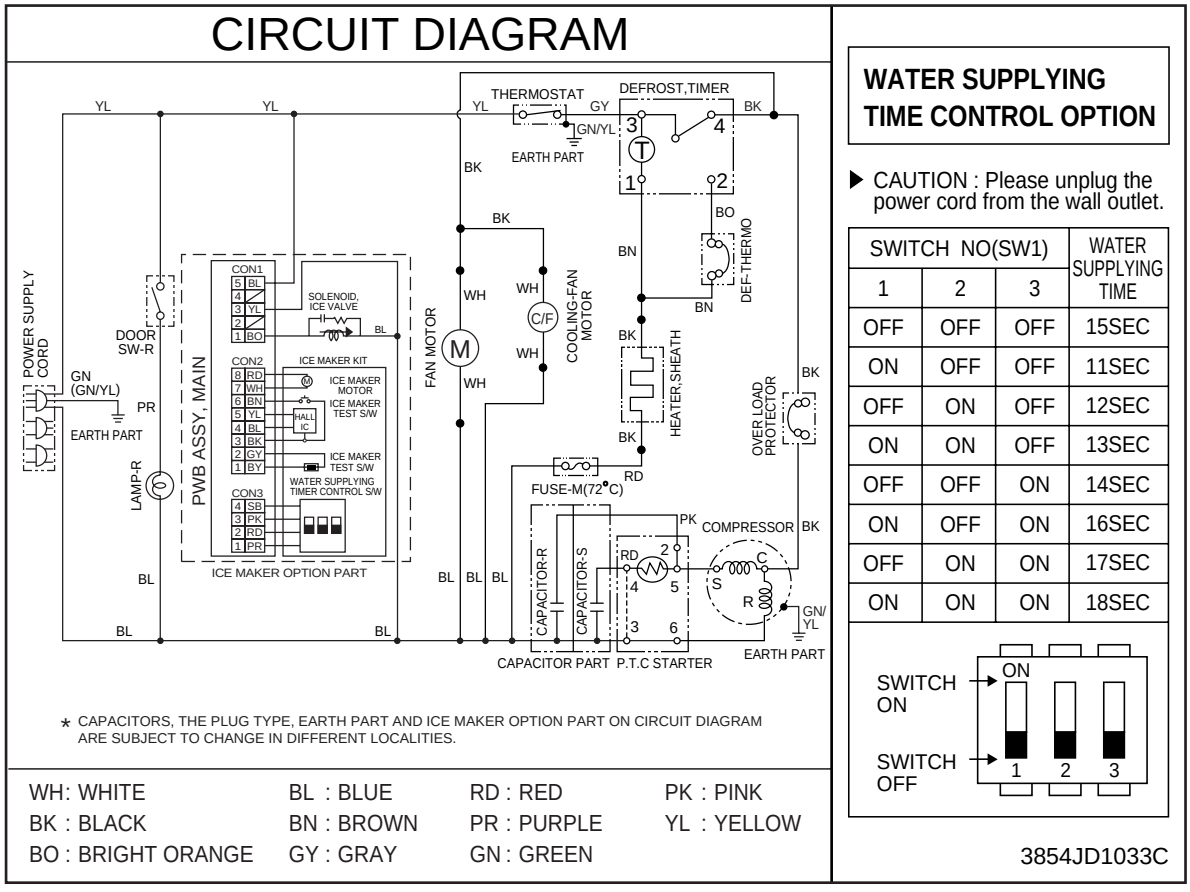


Figure 21

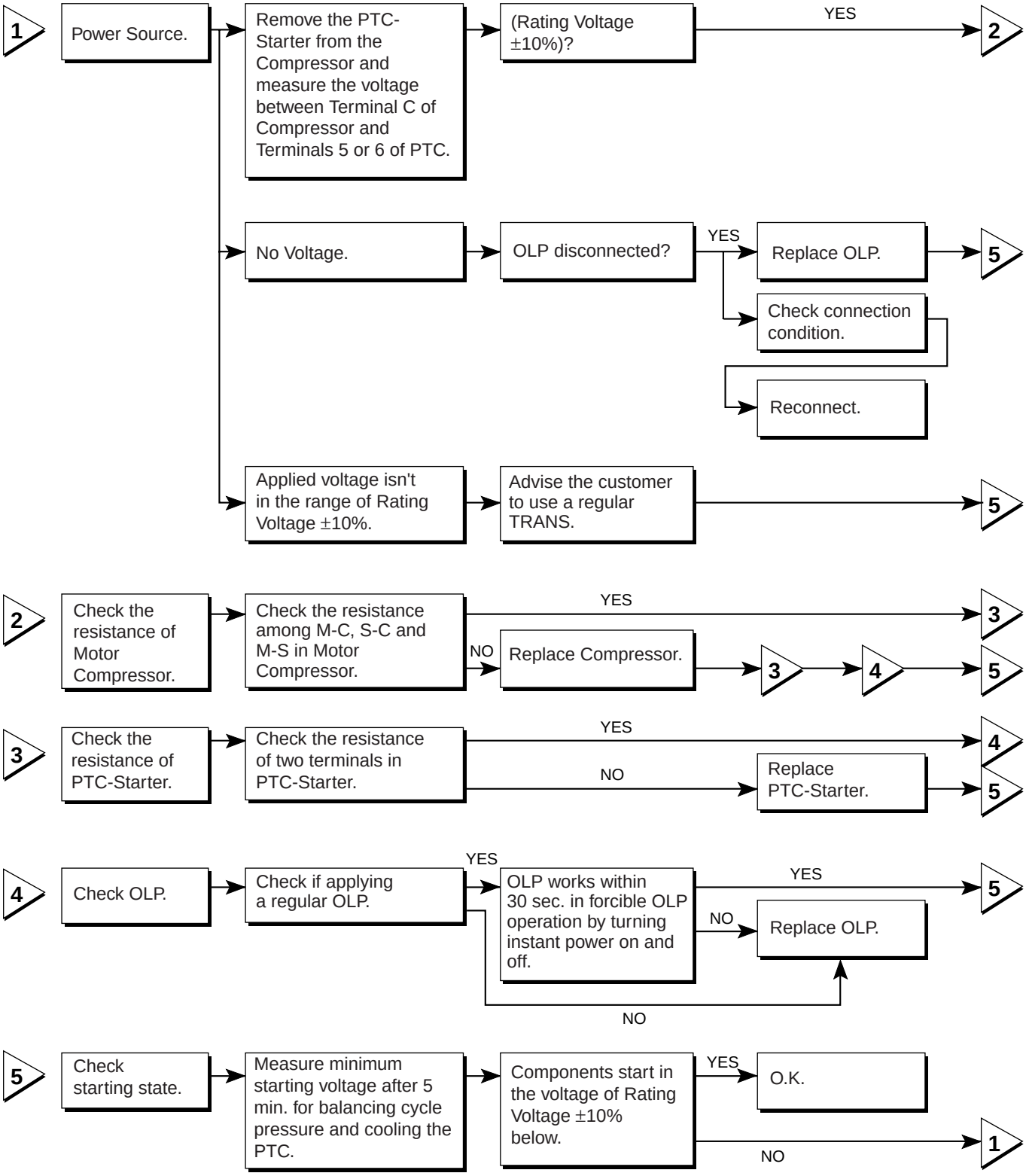
5. CIRCUIT DIAGRAM



NOTE : 1. This is a basic diagram and specifications vary in different localities.

6. TROUBLESHOOTING

6-1 COMPRESSOR AND ELECTRIC COMPONENTS



6-2 PTC AND OLP

Normal operation of Compressor is impossible or poor.

Separate the PTC-Starter from Compressor and measure the resistance between No. 5 and 6 of PTC-Starter with a Tester or Whistone Bridge. (Figure 21)

- Observation value is 220V/50Hz : 22§ ±30% 115V/60Hz : 6.8§ ±30% 240V/50Hz : 33§ ±30% 127, 220V/60Hz : 22§ ±30% → Check another electric components.
- The resistance value is 0 or several hundreds § . → Replace PTC-Starter
- The value is ¡ ˜. → Replace PTC-Starter

Separate the OLP from Compressor and check the resistance value between two terminals of OLP with a Tester. (Figure 22)

- YES → Check another electric components.
- NO → Replace OLP.

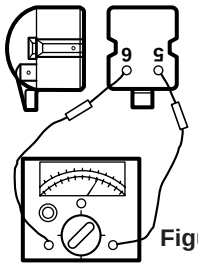


Figure 21

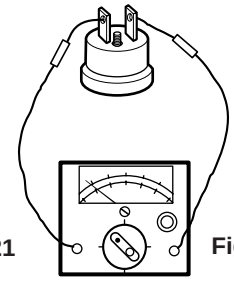


Figure 22

6-3 DEFROST TIMER

- Normal operation of the Defrost Timer is impossible.
- No defrosting.
- Poor cooling.

→ Position the Cam Shaft to the point of first 'click' sound and check the current flowing between terminals No. 1(brown) and No. 2(bright orange). Next, position the Cam Shaft to the point of second "click" sound and check the current flowing between terminals No. 1(brown) and No. 4(black) (Figure 23).

- NO → The resistance is ¡ ˜ → Replace the Defrost Timer.
- YES → The resistance is 0§ or variable. → Replace the Defrost Timer.
- The resistance is about 220V/50Hz : 20K§ 115V/60Hz : 7.8K§ . → Check the another electric components.

Turn the Cam Shaft. → NO → Replace the Defrost Timer.

Shake about 3 times with holding the Cam Shaft and Body softly. → Loud 'click' sound. → Replace the Defrost Timer.

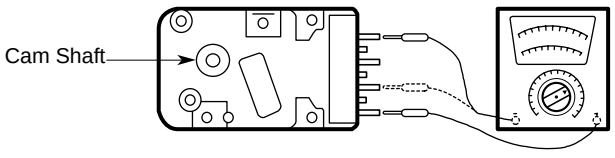
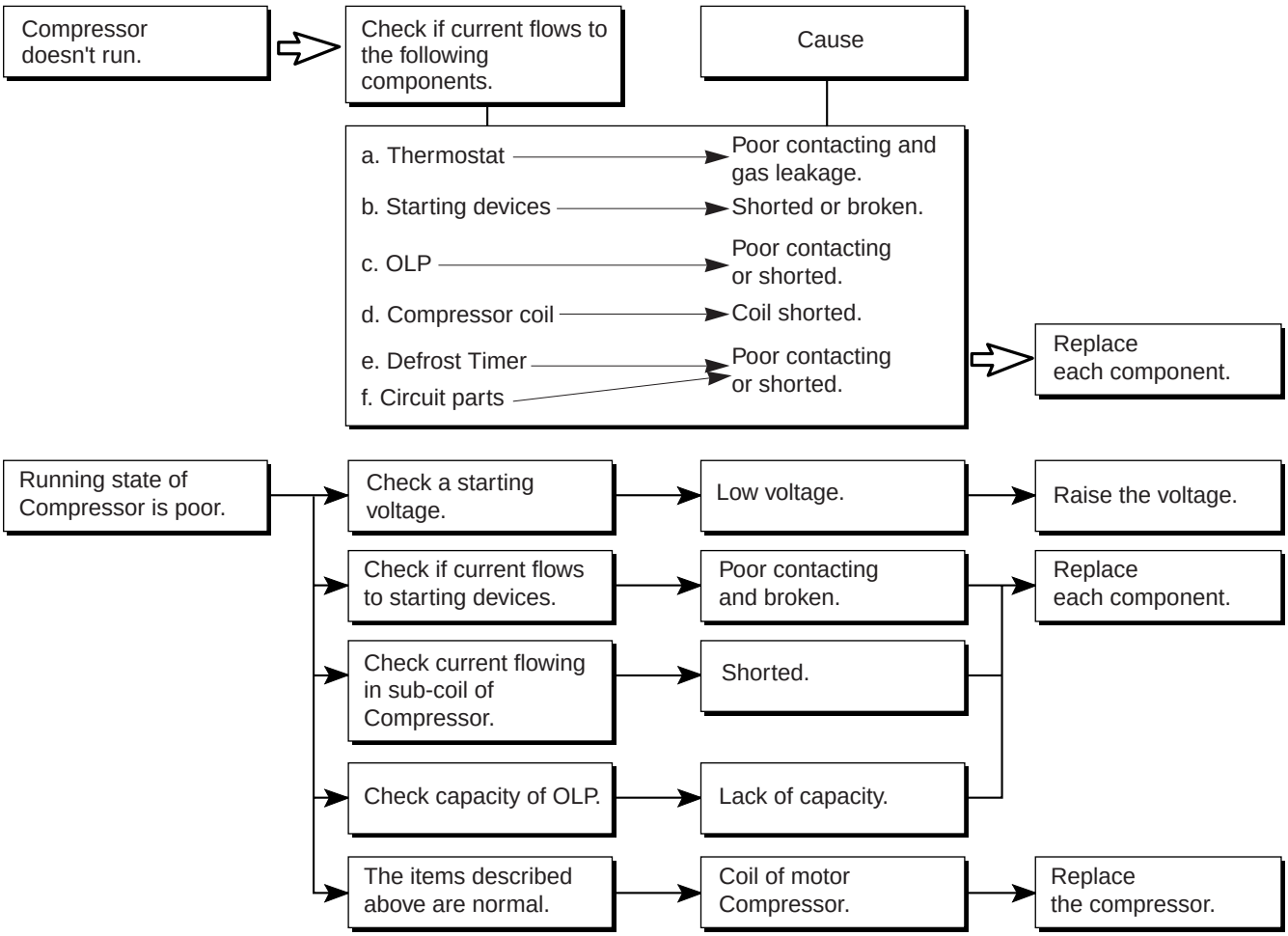


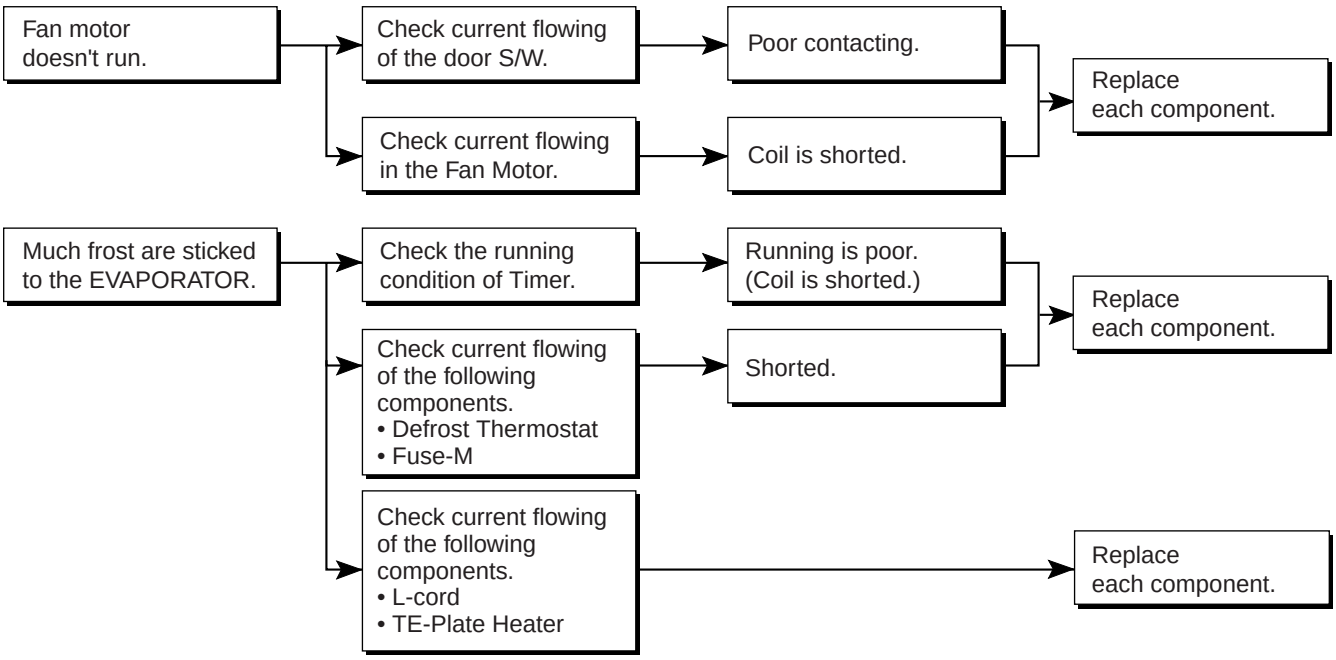
Figure 23

6-4 ANOTHER ELECTRIC COMPONENTS

▼ Cooling is impossible



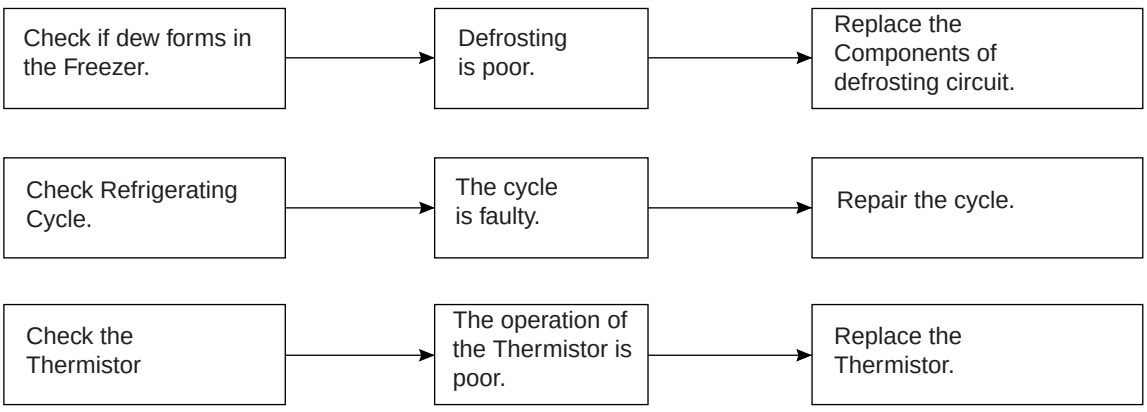
▼ Cooling ability is poor


Fan motor doesn't run.
Check current flowing of the door S/W.
Poor contacting.
Check current flowing in the Fan Motor.
Coil is shorted.
Replace each component.
Much frost are sticked to the EVAPORATOR.
Check the running condition of Timer.
Running is poor. (Coil is shorted.)
Check current flowing of the following components.
• Defrost Thermostat
• Fuse-M
Shorted.
Replace each component.
Check current flowing of the following components.
• L-cord
• TE-Plate Heater
Replace each component.

6-4 SERVICE DIAGNOSIS CHART

COMPLAINT	POINTS TO BE CHECKED	REMEDY
Cooling is impossible.	• Is the power cord unplugged from the outlet? • Check if the power S/W is set to OFF. • Check if the fuse of power S/W is shorted. • Measure the voltage of power outlet.	• Plug to the outlet. • Set the switch to ON. • Replace a regular fuse. • If voltage is low, wire newly.
Cooling ability is poor.	• Check if the set is placed close to wall. • Check if the set is placed close to stove, gas cooker and direct rays. • Is the ambient temperature high or the room door closed? • Check if put in is hot. • Did you open the door of the set too often or check if the door is closed up? • Check if the Control is set to "COLD (1)".	• Place the set with the space of about 10cm. • Place the set apart from these heat appliances. • Make the ambient temperature below. • Put in foods after cooled down. • Don't open the door too often and close it firmly. • Set the control to mid-position.
Foods in the Refrigerator are frozen.	• Is foods placed in cooling air outlet? • Check if the Dial is set to "COLD (8)". • Is the ambient temperature below 5°C?	• Place foods in high temperature section. (Front Part) • Set the dial to "MID (5)". • Set the dial to "WARM (1)".
Dew or ice forms in the chamber of the set.	• Is liquid food stored? • Check if put in is hot. • Did you open the door of the set too often or check if the door is closed up.	• Seal up liquid foods with wrap. • Put in foods after cooled down. • Don't open the door too often and close it firmly.
Dew forms in the Exterior Case.	• Check if ambient temperature and humidity of surroumcling air are high. • Is there gap in the door packed?	• Wipe dew with a dry cloth. This occurrence is solved naturally in low temperature and humidity. • Fill up the gap.
Abnormal noise generates.	• Are the set positioned in a firm and even place? • Are any unnecessary objects set in the back side of the set? • Check if the Drip Tray is not firmly fixed. • Check if the cover of mechanical room in below and front side is taken out.	• Adjust the Adjust Screw, and position in the firm place. • Remove the objects. • Fix it firmly on the original position. • Place the cover at the original position.
To close the door is not handy.	• Check if the door packing is dirty with filth such as juice. • Is the set positioned in a firm and even place? • Is too much food putted in the set?	• Clean the door packing. • Position in the firm place and adjust the Adjust Screw. • Keep foods not to reach the door.
Ice and foods smell unpleasant.	• Check if the inside of the set is dirty. • Did you keep smelly foods without wrapping? • It smells of plastic.	• Clean the inside of the set. • Wrap smelly foods. • The new products smells of plastic, but it is eliminated after 1-2 weeks.

● In addition to the items described left, refer to the followings to solve the complaint.


Check if dew forms in the Freezer.
Defrosting is poor.
Replace the Components of defrosting circuit.
Check Refrigerating Cycle.
The cycle is faulty.
Repair the cycle.
Check the Thermistor
The operation of the Thermistor is poor.
Replace the Thermistor.

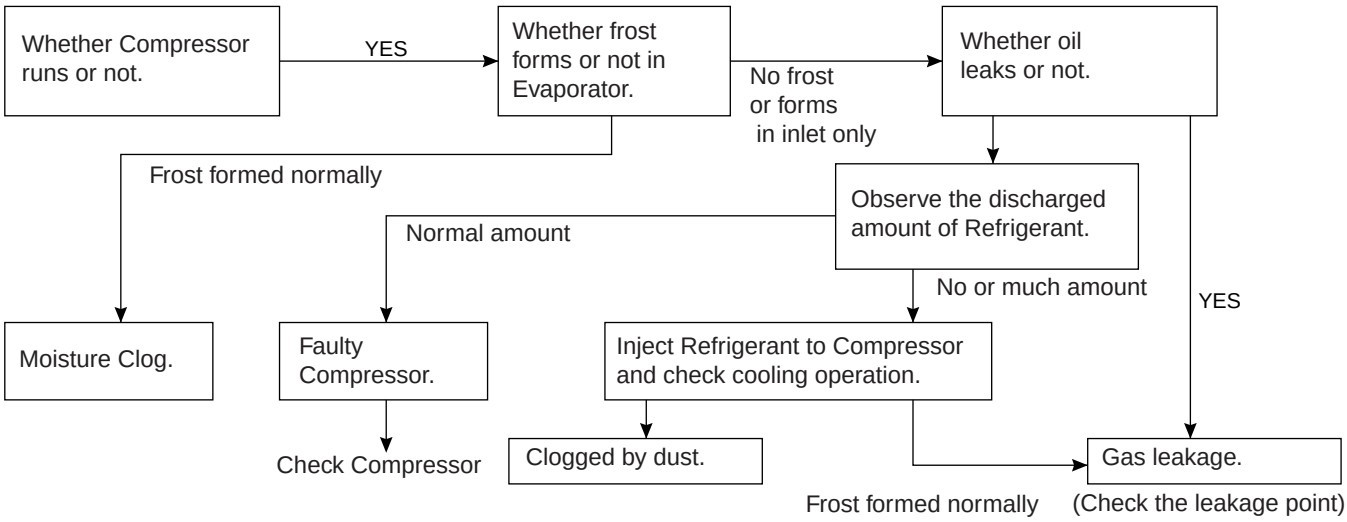
6-5 REFRIGERATING CYCLE

▼ Troubleshooting Chart

CAUSE		STATE OF THE SET	STATE OF THE EVAPORATOR	TEMPERATURE OF THE COMPRESSOR	REMARKS
LEAKAGE	PARTIAL LEAKAGE	Freezer room and Refrigerator don't cool normally.	Low flowing sound of Refrigerant is heard and frost forms in inlet only	A little high more than ambient temperature.	• A little Refrigerant discharges. • Normal cooling is possible when injecting of Refrigerant the regular amount.
	WHOLE LEAKAGE	Freezer room and Refrigerator don't cool normally.	Flowing sound of Refrigerant is not heard and frost isn't formed.	Equal to ambient temperature.	• No discharging of Refrigerant. • Normal cooling is possible when injecting of Refrigerant the regular amount.
CLOGGED BY DUST	PARTIAL CLOG	Freeze room and Refrigerator don't cool normally.	Flowing sound of Refrigerant is heard and frost forms in inlet only.	A little high more than ambient temperature.	• Normal discharging of refrigerant. • The capillary tube is faulty.
	WHOLE CLOG	Freezer room and Refrigerator don't cool.	Flowing sound of Refrigerant is not heard and frost isn't formed.	Equal to ambient temperature.	• Normal discharging of Refrigerant.
MOISTURE CLOG		Cooling operation stops periodically.	Flowing sound of Refrigerant is not heard and frost melts.	Low than ambient temperature	• Cooling operation restarts when heating the inlet of capillary tube.
DEFECTIVE COMPRESSION	COMP-RESSION	Freezer and Refrigerator don't cool.	Low flowing sound of Refrigerant is heard and frost forms in inlet only.	A little high than ambient temperature.	• The pressure of high pressure part in compressor is low.
	NO COMP-RESSION	No compressing operation.	Flowing sound of Refrigerant is not heard and no frost.	Equal to ambient temperature.	• No pressure of high pressure part in the compressor.

▼ Leakage Detection

● Observe discharging point of refrigerant which may be in the oil discharging part in the compressor and hole of evaporator.



▼ **General Control of Refrigerating Cycle**

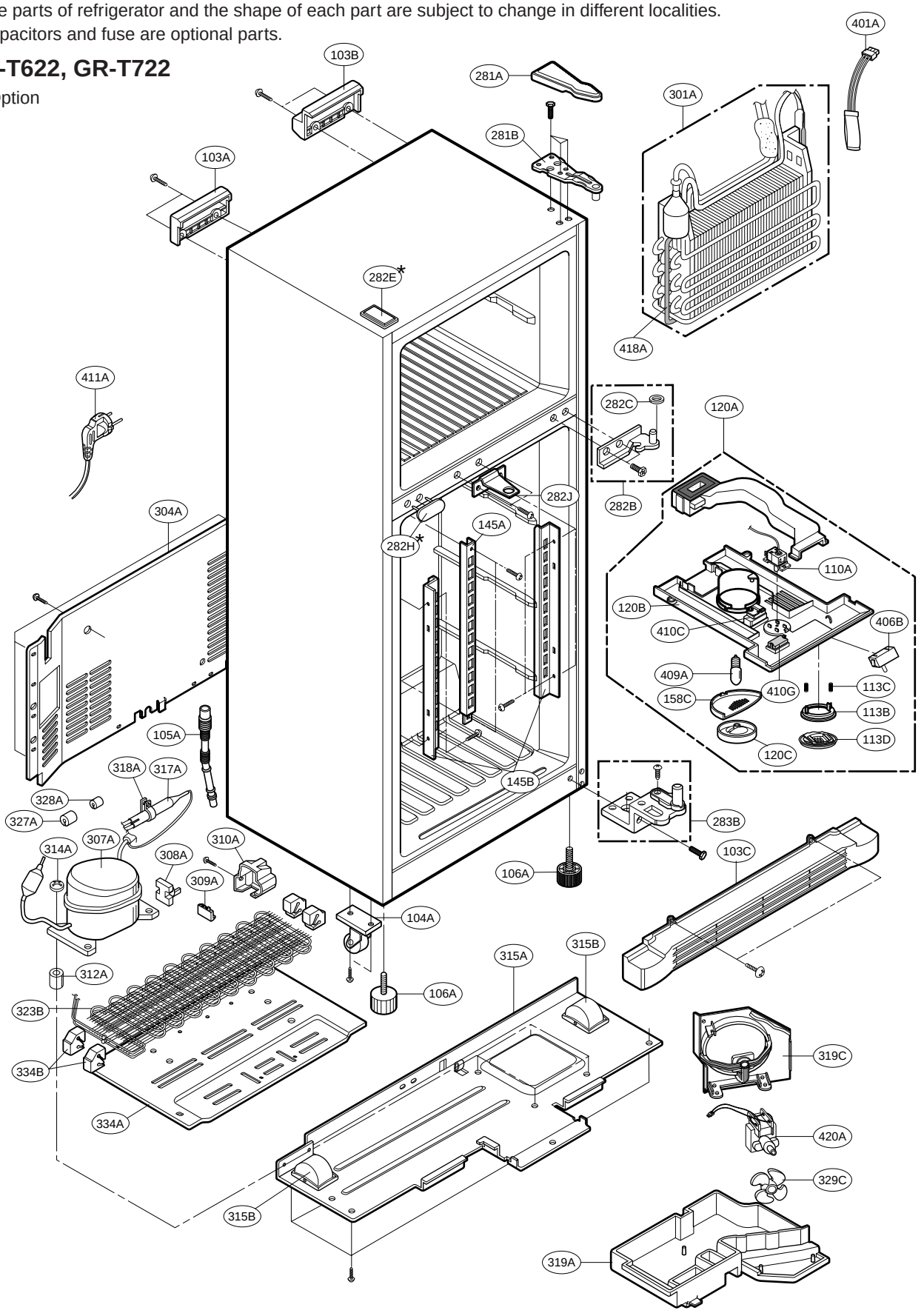
NO.	ITEMS	CONTENTS AND SPECIFICATIONS	REMARKS
1	WELDING ROD	(1) H 30 • Chemical Ingredients Ag: 30%, Cu: 27%, Zn: 23%, Cd: 20% • Brazing Temperature: 710~840°C (2) Bcup-2 • Chemical Ingredients Cu: About 93% P: 6.8~7.5% The rest: within 0.2% • Brazing Temperature: 735~840°C	• Recommend H34 containing 34% Ag in the Service Center.
2	FLUX	• Ingredients and how to make Borax 30% Borax 35% Fluoridation kalium: 35% Water: 4% Mix the above ingredients and boil until they are transformed into liquid.	• Make amount for only day. Holding period: 1 day • Close the cover of container to prevent dust putting in the FLUX. • Keep it in a stainless steel container.
3	DRIER ASM	(1) Assemble the drier within 30min. after unpacking. (2) Keep the unpacked drier at the temperature of 80~100°C.	• Don't keep the drier in a outdoors because humidity damages to it.
4	VACUUM	(1) When measuring with pirant Vacuum gauge the charging M/C, vacuum degree is within 1 Torr. (2) If the vacuum degree of the cycle inside is 10 Torr. below for low pressure and 20 Torr. for high pressure, it says no vacuum leakage state. (3) Vacuum degree of vacuum pump must be 0.05 Torr. below after 5 min. (4) Vacuum degree must be same to the value described item (2) above for more than 20 min.	• Apply M/C Vacuum Gauge without fail. • Perform vacuum operation until a proper vacuum degree is built up. • If a proper vacuum degree isn't built up, check the leakage from the Cycle Pipe line part and Quick Coupler Connecting part.
5	DRY AND AIR NITROGEN GAS	(1) The pressure of dry air must be more han 12~16kg/cm^2 (2) Temperature must be more than -20~ -70°C. (3) Keep the pressure at 12~6kg/cm^2 also when substituting dry air for Nitrogen Gas.	
6	NIPPLE AND COUPLER	(1) Check if gas leaks with soapy water. (2) Replace Quick Coupler in case of leakage.	• Check if gas leaks from joint of the Coupler.
7	PIPE	• Put all Joint Pipes in a clean box and cover tightly with the lid so that dust or humidity is not inserted.	

8. EXPLODED VIEW & REPLACEMENT PARTS LIST

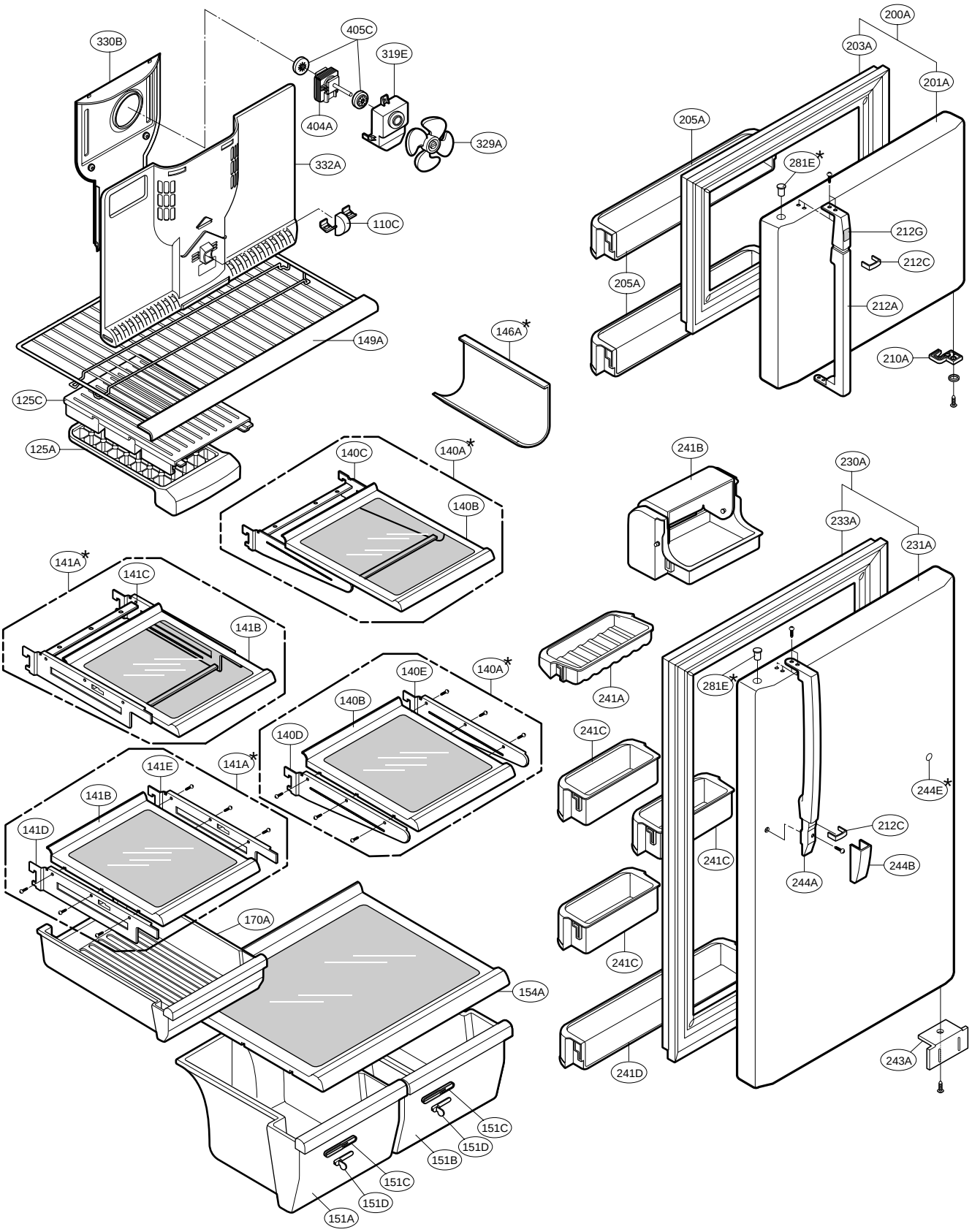
▼ The parts of refrigerator and the shape of each part are subject to change in different localities.
▼ Capacitors and fuse are optional parts.

GR-T622, GR-T722

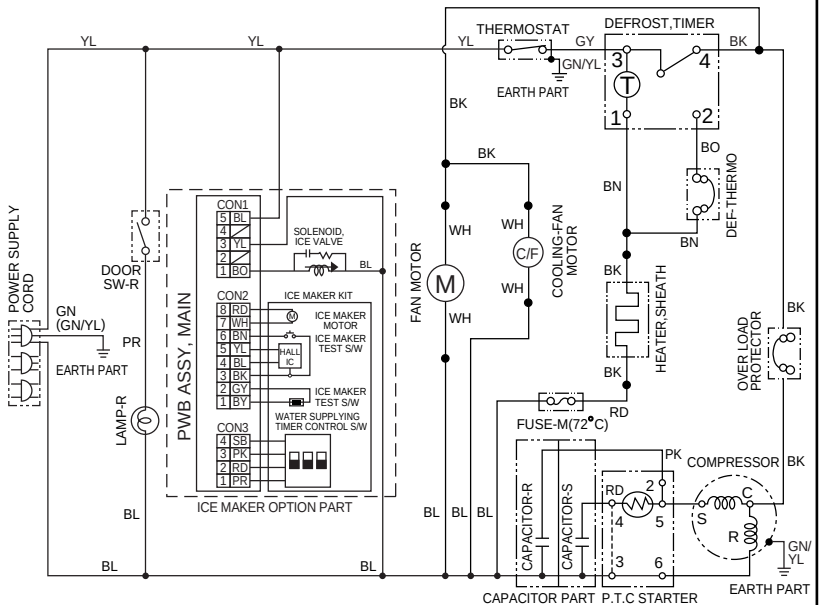
✱ : Option



✱ : Option


330B
405C
319E
404A
329A
332A
110C
149A
125C
125A
146A✱
140C
140A✱
140B
141A✱
141C
141B
140E
140A✱
140B
140D
141A✱
141E
141B
141D
170A
154A
151C
151D
151B
151C
151D
151A
200A
203A
201A
205A
281E✱
212G
212C
205A
212A
210A
241B
230A
233A
231A
241A
281E✱
241C
244E✱
212C
241C
244A
244B
241C
241D
243A

CIRCUIT DIAGRAM



* CAPACITORS, THE PLUG TYPE, EARTH PART AND ICE MAKER OPTION PART ON CIRCUIT DIAGRAM ARE SUBJECT TO CHANGE IN DIFFERENT LOCALITIES.

WH: WHITE	BL : BLUE	RD : RED	PK : PINK
BK : BLACK	BN : BROWN	PR : PURPLE	YL : YELLOW
BO : BRIGHT ORANGE	GY : GRAY	GN : GREEN	

WATER SUPPLYING TIME CONTROL OPTION

▶ CAUTION : Please unplug the power cord from the wall outlet.

SWITCH NO			TIME
SW1	SW2	SW3	
OFF	OFF	OFF	10.5 SEC
ON	OFF	OFF	9 SEC
OFF	ON	OFF	10 SEC
ON	ON	OFF	11 SEC
OFF	OFF	ON	12 SEC
ON	OFF	ON	13 SEC
OFF	ON	ON	14 SEC
ON	ON	ON	15 SEC